

## TITLE OF CASE

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Postsurgical Gastroparesis Syndrome (PGS) following sleeve resection of a giant (6.1Kg) gastric gastrointestinal stromal tumour (GIST)

## DESCRIPTION

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A 70-year old female who underwent a recent laparotomy and sleeve resection for a giant gastric gastrointestinal stromal tumour (GIST) presented two weeks postoperatively with abdominal distention, vomiting and early satiety.

At the time of initial surgery, two months previously, she was found to have a giant mass arising from the greater curvature of the stomach and invading the transverse mesocolon. Her presenting symptoms, at that time, were abdominal distention, postprandial nausea and unintentional weight loss. Due to the extensiveness of the giant mass, it was removed with an open sleeve gastrectomy and transverse colonic resection with primary anastomosis, with the vagus nerve preserved (Figure 1), and a 3 year course of adjuvant imatinib. Postoperative histology reported a 6.1Kg GIST. The patient's other medical history included Bell's palsy, obstructive sleep apnoea and benign uterine fibroids.

Due to the patient's recent surgery, as described above, a computed tomography (CT) scan of the abdomen and pelvis with contrast was requested which showed a massively dilated stomach above the suture line of the previous sleeve resection (Figure 2). The initial concern was that of a benign stricture or narrowing of the gastric sleeve from oedema or early scarring leading to mechanical obstruction. The patient therefore underwent an oesophagoduodenoscopy (OGD) which showed a grossly dilated stomach filled with food residue. The staple line was intact and there was no suggestion of pyloric obstruction. A barium swallow study was organised which reported reduced gastric motility and ruled out a mechanical obstruction. These findings were consistent with gastroparesis and a diagnosis of postsurgical gastroparesis syndrome (PGS) was made. A size 8FR nasojejunal feeding tube and a size 14FR nasogastric tube were endoscopically placed. Intravenous erythromycin was commenced as a prokinetic agent. However, despite ten days of conservative measures her symptoms failed to fully resolve, and a decision to perform a total gastrectomy was made. Completion total gastrectomy with a Roux-en-Y reconstruction was performed four weeks later and the patient made a full recovery postoperatively. She was seen in the outpatient clinic for a follow up and had an oncology referral for courses of adjuvant imatinib chemotherapy. Repeated CT scans at 3 months and 6 months later showed no local recurrence or metastatic disease and she remains well.

PGS is defined as delayed gastric emptying in the absence of mechanical gastric outlet obstruction, with the cardinal symptoms of early satiety, postprandial fullness, nausea and vomiting and bloating after upper gastrointestinal surgery. The reported incidence of PGS after gastric surgery is 0.4%-5%.[1,2] First line management of PGS includes correction of fluids, electrolytes, nutrition and glycaemic control in diabetics. Pharmacological management include prokinetic therapy such as metoclopramide, erythromycin and domperidone with antiemetics to improve symptoms of nausea and vomiting. Gastric Electrical Stimulation (GES) is conditionally used in therapeutic resistant gastroparesis. In the event of failure of medical management, surgical treatments such as completion or subtotal gastrectomy and pyloroplasty may be necessary.[3] A study aiming to quantify risk-scoring system and rating reported that tumour sizes of  $\geq 4.75\text{cm}$  was an independent risk factor of PGS (OR 2.08, 95% CI 1.06-4.51 for  $< 4.75\text{cm}$  vs  $\geq 4.75\text{cm}$ ).[4] The suggested hypothesis is that large tumours are more likely to invade the interstitial cells of Cajal (ICCs) which are responsible for generating electrical activities and propagation of peristaltic contractions.[5,6] In this case, the patient's tumour measured 24 x 13 x 32cm and weighed 6.1Kg (Figure 3), which increased the risk of developing PGS. As symptoms of PGS can be disabling and prolongs hospitalisation, one must be aware of such complications especially when resecting large gastric tumours such as GISTs, which can grow very large in size. [7] With giant GISTs which have been present for several years, one needs to be aware of the risk of gastroparesis as this may influence the type of operation performed. In this case, the GIST was not operable with local wedge resections and an anatomical resection was required. However,

one needs to be aware of the risk of having to perform further operative intervention e.g. total gastrectomy in cases of PGS resistant to medical therapy.

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## LEARNING POINTS/TAKE HOME MESSAGES

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1. PGS is a potential postoperative complication in patients who have undergone gastric surgery, which is defined as delayed gastric emptying in the absence of mechanical gastric obstruction with symptoms of early satiety, postprandial fullness, nausea and vomiting and bloating.
2. First line management of PGS involves correction of fluid status, electrolyte imbalances, nutritional status, and glycaemic control in diabetics. Initial conservative management involves prokinetic agents and antiemetics. Surgery may be needed if medical management fails.
3. Large tumours involving the stomach such as GISTs are highly likely to invading into the ICCs. This impairs physiological peristaltic contractions which subsequently leads to a higher risk of developing PGS.
4. With giant GISTs which have been present for several years one needs to be aware of the risk of PGS as this may influence the type of operation performed and the risk of needing a further operative intervention.

## REFERENCES

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## FIGURE/VIDEO CAPTIONS

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Figure 1: An image captured during open sleeve gastrectomy showing a large mass invading the mesocolon

Figure 2: Coronal view of an abdominopelvic CT with contrast showing a gross dilatation of the proximal stomach above the suture line measuring 12cm x 18.3cm (axial) x 25.3cm (coronal) containing food and fluid residue, causing elevation of the left hemidiaphragm.

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Figure 3: Coronal view of an abdominopelvic CT with contrast showing a very large heterogenous right flank mass measuring 24x13x32cm with mixed haemorrhagic, cystic and solid components.

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## PATIENT'S PERSPECTIVE

"The sleeve gastrectomy seemed to have worked at first. Unfortunately, after a couple of months the bloating and sickness returned. I was admitted and the decision was made to remove my stomach. It has now been just over 8 months since then. I am eating a little more, but sometimes have no appetite for meals. I am not getting as much bloating and sick. I still have some diarrhoea on some days, but I am able to do more activities and walking for longer now. I feel better in myself."

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